Author Index to Volume 19

In this index are listed names of authors and titles of their articles and notes. Abstracts of papers read at meetings are designated by the letter (A) after the number of the page on which the abstract may be found. Papers read at meetings for which an abstract has not been published are not included; however, they are indexed in the Analytical Subject Index. The symbol (L) after an entry signifies a Letter to the Editor.

The different views as to how men are to be arranged into the good society . . . are merely the expression of individual preferences, which in turn are the results of different environmental and hereditary conditions. All *these theories, we suggest, are probably mistaken, because they are erected on foundations that consider only a small fraction of the factual data now available. If one happens to be right, it is nothing more than an inspired guess.*

In much the same way, for two hundred years before 1850, such learned journals as the Philosophical Transactions of the Royal Society *had their pages crammed with methods for attaining perpetual motion. Machines were being invented, not by crackpots, but by the best scientific minds of the generation—men of the caliber of Newton, Huygens, and Hooke. An immense amount of labor went into the design and construction of such machines, and into the individual criticism of theories and mechanical embodiments that accompanied their publication. Toward the middle of the nineteenth century, this debate (which had been carried on in a desultory fashion since the time of the ancient Greeks, and intensively since the rebirth of physics that came with the Renaissance) came to an abrupt end. Such work as Count Rumford's experiments to show the equivalence of heat and work, and Joule's numerical calculation of the mechanical equivalent of heat permitted a great generalization: the law of conservation of energy. This general law permitted men to solve questions dealing with energy on a theoretical level, without building a mechanical model, and without wasting time on the criticism of individual mechanical embodiments. The relatively advanced state of the physical, as opposed to the social, sciences is largely the result of this law. . . .*

Today we stand badly in need of some general laws dealing with the dynamics and statics of society—something analogous to the "law of conservation of energy" and "principle of least action" in physics. . . . If we had such laws we would be able for the first time to give direction *to research. We would know immediately what was possible and what was not possible, without having to perform costly experiments to establish the field.*—E. W. Leaver and J. J. Brown, Science **114**, 379 (1951).

AMERICAN JOURNAL OF PHYSICS VOLUME 19, NUMBER 9 DECEMBER, 1951

Analytic Subject Index to Volume 19

The titles of articles are disregarded, the entries being based on analyses of the contents of the articles. The symbol (A) designates an abstract of a paper read at a meeting; (T) designates title only and (L) designates a Letter to the Editor.

To facilitate reference to any desired subject, the index is divided into sections arranged alphabetically. The titles of these sections are as follows:

Cosmic rays

Cosmography

Courses

Demonstrations

The mathematical form in which new theories are usually dressed is the method by which we assure ourselves that our reasoning is logically sound, and therefore that it can be applied in unfamiliar situations. In his admirable work, "The Nature of the Physical World." Eddington has said that whereas in the nineteenth century the Creator was regarded as an engineer, in the twentieth he is a pure mathematician. I do not agree with this theological diagnosis. Every new body of discovery is mathematical in form, because there is no other guidance that we can have. But as familiarity grows we find unsuspected analogies with our previous experience, and the engineer gets his chance of replacing the mathematician. When Eddington spoke of the nineteenth century he was thinking of the middle and end of it; if he had looked at the beginning he would have seen that the great discoveries of optical theory began life in mathematical form too.—C. G. Darwin, THE NEW CONCEPTIONS OF MATTER, 1931.